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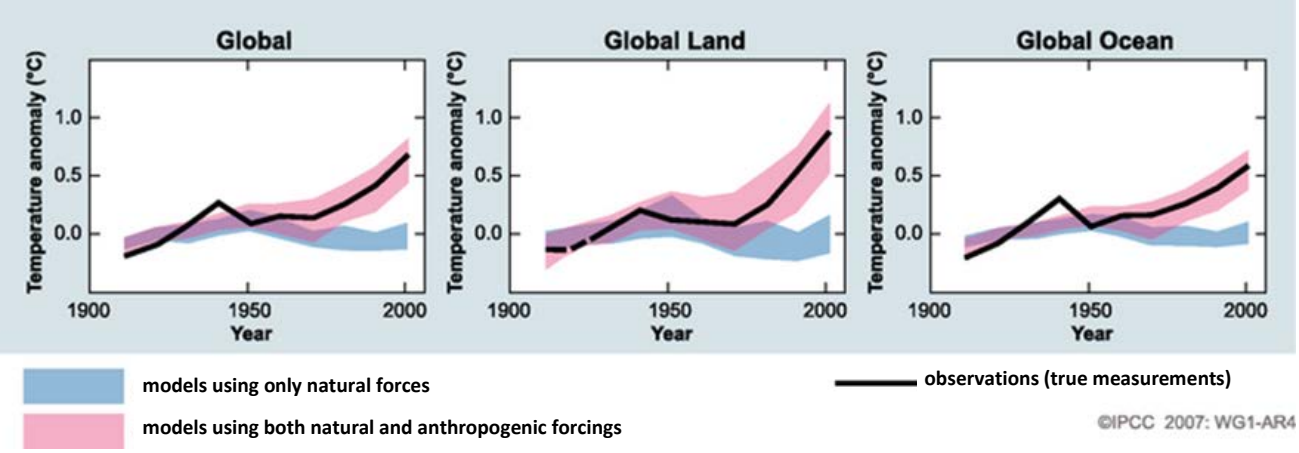
Closer Look: Climate Models

To better understand observed changes in climate and make predictions about what might happen in the future, climate scientists (climatologists) create computer-based mathematical climate models. As shown in the figures below, the current observed (measured and recorded) increases in temperature on the Earth's surface differ greatly from temperatures calculated by mathematical models when only natural causes are included in the models. Only when human influences are, such as the burning of fossil fuels and



Comparison of changes measured in surface air temperature with results simulated by climate models for the period of 1906 to 2005. Changes are relative to the corresponding average for 1901–1950. Observations are shown in black lines. Blue shaded bands show the 5–95% range for 19 simulations from five climate models using only the natural forcings. Red shaded bands show the 5–95% range for 58 simulations from 14 climate models using both natural and anthropogenic forcings.

deforestation are included in the climate model, are scientists able to replicate the increases in temperature that have been seen in the past 50 years. These models tell us that humans have stimulated climate change and global temperature increases.